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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/526,688	03/03/2005	Kazuo Kohmura	MITSPI01US	5294
23623	7590	10/16/2007	EXAMINER	
AMIN, TUROCY & CALVIN, LLP 1900 EAST 9TH STREET, NATIONAL CITY CENTER 24TH FLOOR, CLEVELAND, OH 44114			MOORE, MARGARET G	
			ART UNIT	PAPER NUMBER
			1796	
			NOTIFICATION DATE	DELIVERY MODE
			10/16/2007	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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## Office Action Summary

Application No.

10/526,688

Applicant(s)

KOHMURA ET AL.

Examiner

Margaret G. Moore

Art Unit

1796

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☐ Responsive to communication(s) filed on \_\_\_\_.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1 to 20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1 to 20 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_.
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_.

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1. Claim 4 is objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form. IUPAC defines mesopores as having a diameter of from 2 to 50 nm. Thus this pore diameter range includes values that are outside "mesopore" size and cannot be considered further limiting. See the attached definition of mesopore.

2. Claims 1, 3 to 8, 11, 12, 15, 16 and 18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

It is confusing to state that the method includes thermal treatment when no step of heating treatment is included and it is unclear from this if a heating step is required by claim 1. These claims are incomplete and omit what appears to be an essential step.

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1 to 4, 6 to 9, 14 to 20 are rejected under 35 U.S.C. 102(e) as being anticipated by Wu et al. '572.

Wu et al. teach the use of multifunctional Si based oligomers/polymers for the surface modification of nanoporous silica films. Various siloxanes meeting the organic silicon compound requirement in claim 1 are shown on column 6. Particular attention is drawn to the working examples such as Example 1. This prepares a nanoporous film and modifies the surface of the film by bringing it in contact with a siloxane polymer,

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followed by heat treatment (column 13, lines 14 to 17). This anticipates the instant claims. This film is used to prepare a semiconductor (column 1, line 17).

Column 11, line 60, teaches a preferred pore diameter that meets claims 3 and 4.

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5 and 10 to 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wu et al. '572.

While Wu et al. does not specifically show a cyclic siloxane, one having ordinary skill in the art would have found the selection of such a siloxane to have been obvious for two different reasons. First please note that the formulas on column 6 include cyclic siloxanes and, in fact, suggest cyclic siloxanes since no end unit or terminal group is shown. Second, note that the siloxanes are prepared by the hydrolysis/condensation of a silane. One having ordinary skill in the siloxane art would expect a hydrolysis product to include at least some cyclic siloxanes since a random mixture of condensed silanes will include such a mixture of cyclic and linear siloxanes. In view of these two reasons the skilled artisan would have found it obvious to modify the porous films in Wu et al. with a cyclic siloxane.

7. Claims 1 to 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Martin in view of Smith et al.

Martin teaches the surface treatment of silicon wafer surfaces used in integrated circuits (column 4, lines 7 and on). This method comprises the vapor deposition of a material onto the surface of such wafers. Preferably cyclic siloxanes are used. See for instance Example 1. This differs from that claimed in that this does not specify that the silicon wafers contain a porous films having Si-O bonds.

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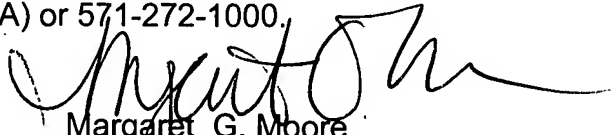
As can be seen from Smith et al., it is well known in the art to form integrated circuit wafers from porous silica films. In fact there are numerous benefits and improved properties associated with such films. See for instance column 1, lines 20 and on, and column 6.

Thus one having ordinary skill in the art would have been motivated by the teachings in Smith et al. to use a nanoporous silica thin film wafer as the wafer being surface treated by Martin. In view of this the skilled artisan would have found the instant claims obvious.

8. Wu et al. '014 is cited as being of general interest. This reference treats nanoporous silica with silane compounds.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Margaret G. Moore whose telephone number is 571-272-1090. The examiner can normally be reached on Monday and Wednesday to Friday, 10am to 4pm.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Margaret G. Moore  
Primary Examiner  
Art Unit 1796

mgm  
10/10/07